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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

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RADIO ASTRONOMY

U. S. Probe to Scan Venus

A space probe with radio telescopes is planned to determine if the surface of Venus is more than 600 degrees hot or about the same as on the earth's surface, Tove Neville reports.

▶ THE UNITED STATES is planning to send four small radio telescopes in a space probe to explore the mysterious planet Venus. This will be the first time radio telescopes have been launched from earth.

The radio telescopes' measurements of the radio spectrum of the planet can settle whether the hot temperatures of more than 600 degrees Fahrenheit, now calculated for Venus, exist on the surface as well as in the atmosphere of the planet.

Dr. A. E. Lilley of Harvard University, Cambridge, Mass., told the International Astronautics Congress in Washington, D. C., that the telescopes will operate on wavelengths from 20 millimeters down to four millimeters.

The probe will be able to do a job close to the planet that no radio telescope on earth can do. Dr. Lilley told SCIENCE SERVICE the probe would show a bright edge around the planet if the surface of the planet has a temperature comparable to that on earth and the high temperatures are concentrated in the ionosphere of Venus.

However, if the "greenhouse effect" binds the sun's heat to the planet, creating high temperatures both on the surface and all through the atmosphere, then the edge of the planet will be "seen" by the space probe as darker than the center.

Dr. Lilley said that if the surface of Venus is no hotter than the earth's, the hot temperatures in its ionosphere will be due to high densities of electrons.

This space probe will be part of the U.S. Mariner program of probes to Mars and Venus, Dr. Lilley said. He also reported that a radio telescope will be launched in a satellite to measure the properties of the oxygen molecule 30 to 80 miles up in the earth's atmosphere by microwave spectroscopy.

• Science News Letter, 80:251 October 14, 1961

POWER FOR TITAN II—The Chippewa spherical, solid propellant rocket engine is used in pairs on the Titan II missile. The 13-inch stainless steel engine, produced by the Thiokol Chemical Corporation, Trenton, N. J., uses a polyurethane propellant.

SPACE

Break Language Barrier

▶ A WORLD-WIDE network of communication satellites could cut down the 6,000 languages now believed to exist in the world to three: English, Mandarin and Russian.

This was suggested by the British physicist and fiction writer who foresaw communications satellites in 1945, Dr. Arthur C. Clarke of Clarke-Wilson Associates, Colombo, Ceylon.

He told the International Astronautical Congress in Washington, D. C., that global TV could be the greatest force yet discovered for breaking down the language barriers that prevent communication between men.

Dr. Clarke pointed out that of the multitude of languages existing, only seven are spoken by half the human race. First on the list is Mandarin, spoken by 15% of all mankind. English is second with 10%. On the five percent level are five languages: Hindustani, Spanish, Russian, German and Japanese.

However, these are mother tongues, and far more people understand English than any other language. Dr. Clarke believes that unless a synthetic language comes into use the choice will be between Mandarin, English and Russian.

Another revolutionary development foreseen by Dr. Clarke is a complete change in man's living pattern caused by global communication and an enormous, rapidly increasing amount of knowledge. Since man cannot do away with time he must learn to use it to greater advantage. He will be able to contact anyone at any time of day and night by satellite telephone or person-to-person TV. However, sleep will interfere with communication around the globe, such as between New York and Bangkok, since one city will have daylight while the other lies in the darkness of night.

The answer, says Dr. Clarke, is less but more profound sleep. He said that in the USSR it is now possible to buy a five-pound box that keeps a person in such profound sleep, through electronic pulses applied to the temples, that only one or two hours sleep is required per day. Thousands of Russians are said to be using this device already, he stated.

Dr. Clarke believes that when people can "travel" all over the world via a screen and see anyone they wish instantly over satellite TV, actual travel will be reduced. This he sees as bad for the travel business but good for business in general.

The educational value of bringing information to the uneducated millions by picture and voice will be inestimable, but transmission of conflicting ideologies may also lead to new international problems with the result of jamming satellite communication from one country by another.

For better or for worse, communications satellites will be the nervous system of mankind, which will link the whole human race in a unity no earlier age could have imagined.

• Science News Letter, 80:251 October 14, 1961

Man Not in Space

▶ THE PROBABILITY that man, as he is known on earth, exists anywhere else in the universe is so remote that it can be ruled out, an Italian biologist believes.

Dr. Rodolfo Margaria of the Milan University told the International Astronautical Congress in Washington, D. C., that the same geological, physical and chemical events that took place over three billion years on earth leading to life as now known would have to be duplicated exactly to create man elsewhere.

If the same elementary form of life did arise on another planet, the probability that it followed the same evolutionary path as man during the same time is so small as to be impossible to compute, he said.

Life in space, if it exists, will be far more different from man than is any other form of life surrounding man on earth, such as trees, Dr. Margaria predicts. Trees grow and have evolved under the same conditions as man and have also the same origin and ancestor as man.

Dr. Margaria believes it is unlikely man would find intelligent beings in the universe to communicate with. Such beings would have to be at least as intelligent as man as both sides would likely be handicapped by not having the same sensory organs. He pointed out how difficult it is for man to communicate with even the higher mammals which are so similar to man.

He noted that although it has been claimed that the chemical composition of the universe is fundamentally the same everywhere this claim refers to stars or solar systems as a whole.

For living forms to develop only the chemical condition of the surface of the planet is important and this is not supposed

to be the same everywhere. Such factors as chemical composition, including that of the atmosphere, irradiation from the sun (star), temperature and mass (gravitational force) must be considered.

The time element is also important in considering finding life on a planet. Animal species such as man last a relatively short time compared to the "life" of a planet. Man has only existed one ten-thousandth of the age of the earth.

• Science News Letter, 80:251 October 14, 1961

SPACE

Nations Could Own Moon

➤ THE SONG tells that "The moon belongs to everyone," but an Austrian lawyer told a colloquium on space law to the contrary. He said the moon and planets belong to no one.

Dr. Ernst Fasan, attorney from Neukirchen, told the International Astronautical Congress in Washington, D. C., that human life is not dependent on the moon and planets and they can therefore be occupied. For this reason it is necessary to reach an international agreement, and this should be done, he told SCIENCE SERVICE, before anyone lands on the moon.

So far no laws or international agreements have been adopted about rights and liabilities in space, and the Congress aims to draw up some form of outline to bring law and order in space.

Dr. Fasan said two opposing theories are being much discussed. One holds that heavenly bodies belong to no one; the other that they belong to everyone.

Dr. Fasan believes the sun and stars belong to everyone and can be owned by no one because they are essential to life and men will never be able to set foot on the sun or a star to occupy them. They could be considered in international law in the same manner as the high seas.

Common consent to international space agreements does seem to exist, Dr. Fasan said. This can be seen in the words of three world leaders. The late Secretary General of the United Nations, Dag Hammarskjold, said at the 12th session of the United Nations in 1958, that "outer space, and the celestial bodies therein, are not considered as capable of appropriation by any state."

Former President Eisenhower said in an address in the U.N., Sept. 22, 1960, "I propose we agree that celestial bodies are not subject to national appropriation by any claims of sovereignty."

Prime Minister Khrushchev supported this stand on his visit to the United States in 1959 when he said, "We regard the sending of a rocket into outer space and the delivery of our pennant to the moon as our achievement, and by this word 'our' we mean the countries of the entire world."

• Science News Letter, 80:252 October 14, 1961

SPACE

Seven Spaceships to Mars

➤ SEVEN SPACESHIPS, not one, will make the first manned flight to Mars. Each vehicle will be capable of returning all the men in the other ships to earth in case of accident, Dr. Ernest Stuhlinger, director of the National Aeronautics and Space Administration's Marshall Research Project Division, Huntsville, Ala., reported.

The interplanetary voyage to Mars is scheduled within the next 15 to 20 years. Of the seven ships making the trip, only three will carry landing craft. The other four, which will carry extra fuel for the return trip, will go into orbit around Mars.

Each of the three ships landing on Mars will carry sufficient fuel to take all crew men from the other two crafts back to the orbiting vehicles if trouble develops.

The propulsion system for the planned flight to Mars is still undecided, but scientists at Hughes Aircraft Company's Research Laboratories, Malibu, Calif., believe it will be an operational model of an ion engine, with electrical power supplied by a nuclear reactor.

The ion engine, which operates only after being boosted into space by conventional means, uses the expulsion of ions (charged atoms stripped of their outer electrons) to provide a small but steady thrust for space flight. The ion engine's thrust could build up to propel a space craft at a speed of 2,000,000 miles a day. To do this, the engine must have a power supply of 30 kilowatts of electricity.

An electrically propelled space craft to Mars and back could be built with a useful payload of about half its total initial mass, Dr. Stuhlinger said.

• Science News Letter, 80:232 October 14, 1961

ASTRONOMY

Only Ten Giant Galaxies Send Out Radio Signals

➤ THE SUPERGIANT galaxies, huge star systems containing millions upon millions of stars, are believed to send out radio waves into space for only a very limited part of their lifetimes.

Although all large clusters of star systems contain supergiant galaxies, only very few of them are radio-galaxies, the Russian astronomer, Dr. V. A. Ambartsumian, the new president of the International Astronomical Union, has reported. He said the radio emitting activity of such galaxies must be a short phase in the evolution of such systems.

The material causing the radio emission from the systems is apparently part of the outflow from the center, or nucleus, of energy masses even more powerful than the supergiant galaxies at a certain stage in their life cycle, Dr. Ambartsumian said.

He added that observations of huge bursts of energy from one giant galaxy do not conform to the information astronomers now have about the masses of the nuclei of galaxies. What goes on in other radio galaxies is even more difficult to interpret.

"The few facts at our disposal show that these data may come in conflict with the law of conservation of energy (and matter) as it is in its present form and perhaps require a generalization of this law," he said.

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MEDICINE

Test For Rheumatic Ills

➤ A SHARP DROP in the 19,000 annual deaths from rheumatic fever and rheumatic heart disease is possible as a result of tests now available.

The pediatrician or family doctor who is not sure his patient with a sore throat needs antibiotics to kill any possible streptococcus germs can now send a swab to a laboratory and receive a telephoned report in three hours.

An exhibit at the 30th annual meeting of the American Academy of Pediatrics in Chicago showed how quick the tests work.

Dr. Martin E. Levy of the U. S. Public Health Service said that swabs sent to a laboratory are put in broth culture for two hours, after which the technicians make a smear to put on a glass slide.

The smear is stained with fluorescent antibodies. If the germs believed to cause rheumatic fever are present, they will glow under a microscope adapted with ultraviolet light.

Chicago has just begun a system of mailing throat kits that can carry swabs to some 40 laboratories in the city. Not all laboratories are equipped to use the new fluorescent antibody method, but the Chicago Board of Health Laboratory and some of the hospital and commercial laboratories are using it.

Dr. Levy told SCIENCE SERVICE that the Public Health Service has made the fluorescent test available to every state and territory of the U. S. and has trained at least one technician who can train others in the technique.

Connecticut, Iowa, Texas, Wisconsin, California, Colorado, Wyoming, New York and North Carolina have active state programs. Chicago is the only city with a comprehensive program.

• Science News Letter, 80:253 October 14, 1961

Needless Operations

➤ TOO MANY needless operations have been performed to remove limbs of frostbite victims, an Alaskan surgeon told the 47th annual clinical congress of the American College of Surgeons in Chicago.

Dr. William J. Mills of Anchorage, Alaska, said that rapid rewarming in water or, if possible, in a whirlpool bath can save limbs. The required temperature is a painful 110 to 118 degrees Fahrenheit.

Dr. Mills and his co-workers have successfully treated some 60 frostbite victims in Alaska. He said the rapid rewarming should be followed by "open treatment" without ointment or salve.

• Science News Letter, 80:253 October 14, 1961

Heart Transplanted

➤ A TECHNIQUE to transplant the heart in dogs was reported at the 47th annual clinical congress of the American College of Surgeons in Chicago.

Dr. Peter Hairston of the University of Virginia School of Medicine, Charlottesville, Va., said the technique he had developed enabled investigators to observe and record survival characteristics.

The dog is maintained on a heart-lung machine while his heart is removed and replaced by the transplanted organ. The experiment was performed 23 times, with 22 of the transplants surviving one to eight hours. All transplanted hearts showed a relatively normal electrocardiogram at one time.

• Science News Letter, 80:253 October 14, 1961

Child Poisoning Common

➤ POISONING is the commonest medical emergency, aside from mechanical accidents, treated in a pediatrician's office.

Dr. Edward Press, health director of Evanston, Ill., and chairman of the first organized poison control center in the United States, said there are more than 300,000 "episodes" of poisoning among young children in this country every year.

Between 400 and 500 children die each year from poisonous solids and liquids. Around 80 of the children die from drinking kerosene or some petroleum distillate such as lighter fluid.

Dr. Press attended the fourth annual meeting of the American Association of Poison Control Centers in Chicago. He received a gold medal from the American Academy of Pediatrics for outstanding service to the professional society dedicated exclusively to the improvement of child health and welfare.

• Science News Letter, 80:253 October 14, 1961

ROENTGENOLOGY

Unnecessary Amputation Avoided by X-Ray Use

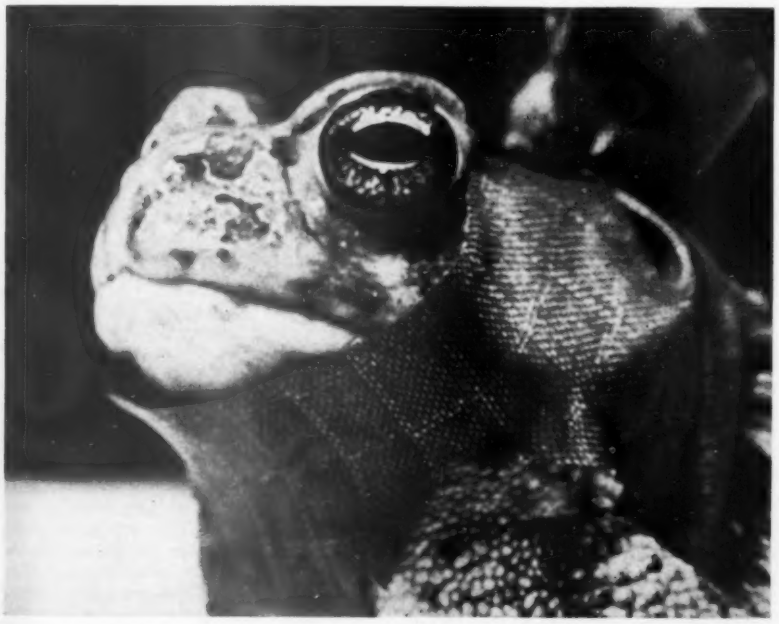
➤ UNNECESSARY amputation of legs and arms can be avoided by using a combination of X-rays and laboratory studies to differentiate benign bone tumor from bone cancer.

Drs. Bernard Turcotte, David G. Pugh and David C. Dahlin of the Mayo Clinic in Rochester, Minn., reported to the American Roentgen Ray Society in Miami Beach, Fla., that the tumor called chondromyxoid fibroma can be distinguished from the more serious and cancerous condition chondrosarcoma.

The spread of cancers in the neck and head through nerve fibers along nerve canals can be detected by X-ray studies, according to Drs. Gerald D. Dodd, Patrick A. Dolan and Alando J. Ballantyne at the M. D. Anderson Hospital and Tumor Clinic at Houston, Texas.

Cancer cells push among nerve cells but cannot invade them, and the nerve continues its normal function. Since there is no pain or clinical symptoms, it is difficult to detect the cancer invasion.

• Science News Letter, 80:253 October 14, 1961



WIRED TOAD—The garment of silvered cloth wires the toad to electric devices for research on survival of the heart with low oxygen supply. The project for finding ways of preventing heart failure is being undertaken by Indiana University, Bloomington, Ind., under a grant from the U. S. Public Health Service.

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MAN AND NUMBER

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By Donald Smeltzer

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"The evolution of the use of number from the earliest times. The material has been well selected to exhibit the rich diversity of counting methods, signs and words, the various ways of recording numbers, early calculating devices, the development of the modern number systems."—Scientific American

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MATHEMATICS

Remedy Lag in Math

➤ LEADING American research mathematicians have organized to remedy the ignoring of mathematics know-how which, it is judged, is seriously damaging our defense effort in comparison with Soviet advances.

"The technical challenge of the Soviet Union is more serious than is generally realized," Dr. Harlan D. Mills, president of the newly organized American Science Complex, declared. Modern military, space, and atomic systems, in their opinions, require a theoretical emphasis more characteristic of Soviet and European engineering than the traditional cut-and-try methods used in America.

The newly formed American Science Complex includes the heads of departments of mathematics or statistics at leading universities, and officers of national mathematical organizations. It intends to identify and attack important theoretical problems in the physical, engineering and managerial sciences.

The feeling of the mathematicians is that the spectacular Soviet scientific achievements since World War II cannot be explained away as lucky or of little consequence. The Soviets have big boosters because they have the theoretical know-how. Academician L. Sedov, president of the International Astronautical Association, has credited the close cooperation between the mathematical sciences and the physical sciences as one of the great over-all factors in Soviet success.

Mathematicians are concerned over the fact that not a single mathematician is among the 20 scientists on the Space Science Board of the National Academy of Sciences or the more than 80 on its panels and committees.

The announcement of the newly formed organization states: "American industrial companies tend to be over-optimistic about their individual technical capabilities, thus hardware and system developments are often proposed without adequate theoretical foundations, or even the realization that they are missing. Systems are simulated rather than analyzed, patched together rather than designed."

• Science News Letter, 80:254 October 14, 1961

INVENTION

Patents of the Week

➤ A COLLAPSIBLE typewriter, small enough when not in use to be carried in a brief case "or even inside a coat pocket," has been patented by a Swiss inventor.

Marcel Fresard, Geneva, assigned rights to patent No. 3,001,631 to Mefina S.A., Fribourg, Switzerland.

In its compressed state, the machine is less than half of its full operative size. It forms a portable package approximately ten inches long, five and one-half inches wide, and one and one-fourth inches high.

When the typewriter is open, the keyboard is of standard size and shape. When the casing is collapsed, the cover and the key bars are moved up and over to fit into place against the type bars and connecting rocker levers.

A roofing system involving strips of metal shingles, arranged to cover a sloping roof in stairstep fashion, won patent No. 3,001,331 for Donald C. Brunton, Pennington, N.J. Rights were assigned to the Pendennis Company, Toronto, Canada.

Flat, horizontal strips, left unpainted but highly polished to reflect summer sunlight, alternate with painted vertical strips that absorb heat from the sun in winter. The painted strips form the part of the roof seen from the ground, and the reflective area can operate effectively without annoying the neighbors or blinding passing motorists.

A Garden Grove, Calif., physician received patent No. 3,001,397 for a two-cylinder meter system that accurately measures the flow-volume of liquids, particularly blood, without interrupting the flow and without coming in contact with the surrounding air.

The inventor, Dr. Joe H. Leonard, told SCIENCE SERVICE the device may be used with artificial kidneys and heart-lung machines, as well as providing increased accuracy when intravenous fluids and blood are administered to hospital patients.

In use, the two connected cylinders, made of glass or transparent plastic, form upper and lower reservoirs through which the entire flow passes. Flow rate is calculated by closing the valve between the two cylinders for a predetermined time, then measuring the rise in the liquid level in the upper cylinder. An inert gas supplies system pressure.

A method that allows a large number of pianos to be played by practicing students in the same room, won patent No. 3,001,431 for Clifford W. Andersen, De Kalb, Ill., who assigned rights to the Rudolph Wurlitzer Company, North Tonawanda, N.Y.

Each student would use a set of earphones plugged into the electronic piano being played, to listen to his own work without hearing any other playing. The teacher can "tune in" on any single student by plugging earphones into a central station, linked to the pianos by transmission lines.

Mr. Andersen, who earlier invented a small, space-saving electronic piano, said the earphone teaching device can be used with other instruments.

• Science News Letter, 80:254 October 14, 1961

ANTHROPOLOGY

Iron Curtain Neanderthal

▶ A UNITED STATES anthropologist has just made a trip behind the Iron Curtain to shed new light on a Neanderthal man who lived at least 100,000 years ago.

Dr. T. Dale Stewart of the Smithsonian Institution, Washington, D. C., told SCIENCE SERVICE he studied and took measurements of Neanderthal remains found at Krapina about 35 miles northwest of Zagreb, Yugoslavia.

He found from studying the pelvic bones that this primitive creature was in evolutionary development somewhere between the very primitive, or classical, and a type more like modern man.

The classical type Neanderthal man has a very low brow and practically no chin. His remains have been found in Shanidar Cave in Iraq, and in Tabun Cave, Mt. Carmel, Palestine. A type more like modern man was found in Skhul Cave near the Tabun site. Dr. Stewart said the Krapina Neanderthal falls between the Shanidar-Tabun type and the more modern appearing Skhul man.

Dr. Stewart was particularly interested in studying the pelvic bone of this primitive man as a certain part of it is thinner in Neanderthals than in modern man and has an unusual shape completely different from anything ever found in modern man.

The fossil remains of Krapina man are well cared for at the University of Zagreb where they are kept in glass boxes inside glass cases, Dr. Stewart said. A plaque in the wall of the room memorializes Dr. Karl Gorjanovic, who first described the remains and supervised the collection of them.

Krapina Neanderthal man's remains were found between 1902 and 1905 in a shallow rock shelter where the fossil bones of buffalo, rhinoceros and bear had been found repeatedly since 1895.

The plants found with the bones belonged to a warmer climate than now found in the region. This indicates Krapina man must have lived before the last glacial period which began about 100,000 years ago. About 1,000 stone artifacts of flint and bone were found, most of them waste chips from the making of tools and weapons.

An earlier expert, the late Dr. A. Hrdlicka, physical anthropologist at the Smithsonian from 1912 to 1923, wrote a report on Krapina man giving measurements and photographs of some of the specimens.

However, Dr. Stewart explained, in studying one particular feature of the bone structure, it is very important to have exact description and pictures of all the bones found in order to make conclusions about the type.

Dr. Stewart went behind the Iron Curtain to see the original specimens for himself because some of them have never been completely described.

• Science News Letter, 80:255 October 14, 1961

EDUCATION

Teaching by Computer

▶ STUDENTS registering at the Massachusetts Institute of Technology this fall found a new sign on the bulletin board:

"Tired of human teachers? Think a computer can teach better? Find out for yourself by taking a one-hour experimental course on the IBM 709."

More than could be accommodated signed up, and the big electronic computer gave the course to 20 students. It was a course in miniature geometry, based on two definitions and four axioms, and the machine sped one man through it in 33 minutes but took 78 minutes to make certain that another fellow mastered the subject.

Richard D. Smallwood, a graduate student, programmed the computer to do this as part of his study of the use of computers as aids to education. The great memory and speed of a large computer, he thought, should make it superior to simpler teaching machines.

Each student was seated at a microfilm projector with notepaper and an electric typewriter. The machine gave him instructions and put questions to him on the projector screen, and he answered its questions by punching appropriate keys on the typewriter. A book of instructions was stored in the computer's memory and the machine determined what material should be presented to each student in the light of its previous experience and its appraisal of each individual's needs. The computer proceeded, in other words, as though it were playing a game: it considered the possible alternatives at each stage of the course and chose the one that seemed most advantageous.

Mr. Smallwood was seeking answers to two questions: Would the computer vary its presentation of the material when individuals responded differently to its questions? And could it learn from its experience with different individuals and thus become a better tutor as it gained experience? His experiment with 20 students in the course in miniature geometry indicated that the answer to both questions is: "Yes."

• Science News Letter, 80:255 October 14, 1961

EDUCATION

Future Students May Get Both Science and Culture

▶ TEACHING machines could give students of the future both a scientific and a cultural education.

Student capacity to learn has already been found to be far greater when using teaching machines than with present methods. They learn more, faster and better with the machines.

A young man or woman in today's or tomorrow's society must become "bilingually" fluent and be able to transmit concepts expressed in mathematical terms as well as thoughts expressed in language.

A person with a cultural, or classical, education has mastered and stored many involved thoughts. He is able to think quickly and make judgments from the experience of others and can bring across his own ideas.

However, the culturally educated will likely be a mathematical illiterate, but by the same token the scientifically educated who can express his ideas in mathematics is often unable to communicate his ideas in the spoken languages.

Two persons educated on the extreme levels of science without cultural studies, and cultural studies without science can be as unable to communicate wtih each other as two men from different planets.

Ivan A. Getting, president of the Aerospace Corporation, Los Angeles, Calif., told the Air Force Association Convention in Philadelphia that a "quantum jump in teaching techniques" is needed.

The basic curriculum should be changed, he declared, and is now being changed in many schools. Science is becoming recognized as an integral part of the so-called classical education and in the science-based education, social studies, history, philosophy and economics are being emphasized. He said the ideal situation would be that each student gets both one discipline in depth and the best of a cultural education. This may be possible by using new teaching tools.

• Science News Letter, 80:255 October 14, 1961

NEW TWIST—Graphite cloth, magnified 150 times, shows more than 1,400 filaments per twist. The fabric, produced by National Carbon Company, a division of Union Carbide Corporation, New York, is being combined with plastic resins in the molding of missile and rocket motor components such as nose cones.

GEOPHYSICS

Comet, Not Meteorite, Ruined Siberia Forest

➤ THE FAMOUS 60-mile swath cut through a Siberian forest in 1908 was likely made by a comet and not a meteorite.

Russian scientists investigating the site said evidence indicates that the heavenly body came from outer space past the solar system.

"This is characteristic of comets and not of meteorites," Drs. V. G. Fesenkov and Ye. L. Krinov report in an article translated by the Joint Publications Research Service.

Aerial photographs of the impact area showed that the fiery comet exploded at least three times in mid-air. The explosion seared the land and knocked down trees over a 30-mile radius. Ground tremors and shock waves were picked up by observatories hundreds of miles away.

The Russian proposal contradicts the widely-held theory that the devastated area was caused by a meteorite. Russian scientists say the head-on collision at such high velocities had to come from an object hurtling in a direction against the movement of the solar system.

A comet, which normally goes against the "grain" of the solar system, is the answer, the scientists emphasized.

Comets are gaseous balls, spotted with tiny particles, that periodically enter the solar system. Meteorites are stony or metallic bodies that rotate around the sun. When the earth passes through their orbit, they enter the atmosphere and fall to earth.

"No fragments of meteoritic substance have been found in the central area of the fall, despite the enormous size of the body," the article stated. The tremendous explosions virtually disintegrated the small particles of the comet.

The fall occurred in a forested region of the Tunguska River in north central Siberia. Many craters were formed near the center, but no lives were lost. Scientists did not visit the remote area until 1927.

• Science News Letter, 80:256 October 14, 1961

GEOLOGY

Earth's Hot Center Is 12,000 Degrees

➤ THE EARTH'S CENTER is a searing hot mass of iron with temperatures greater than 12,000 degrees Fahrenheit.

The earth's core, a solid ball of iron with a thick liquid covering, has a density of nearly 600 pounds per cubic foot, Dr. V. N. Zharkov of the USSR Academy of Sciences reports in an article translated by the U. S. Joint Publications Research Service, Washington, D. C.

Dr. Zharkov based his figures on complex theoretical equations and indirect evidence of the earth's core.

Shock waves generated by earthquakes or man-made explosions hurtle through the earth's inner layers, passing through the center. The bending of the waves as they pass through the various layers helps scientists determine the approximate densities of the layers.

The figures were inserted in a formula and compared with theoretical figures obtained from an iron core. Dr. Zharkov's 12,000 degrees is three times greater than previous estimates.

A small amount of nickel may also be present in the core, the scientist believes.

High pressures make the core more dense than iron found on the surface. The average density of iron is about 450 pounds per cubic foot. One cubic foot of water weighs approximately 62 pounds.

Scientists have been debating what the center of the earth is like for many years. Before seismic instruments were developed, they had very little to go by. This gave rise to many popular misconceptions such as the possibility that the core was made of gold.

One 19th century writer pictured the earth's center as being hollow, an idea that actually had many followers during that time.

• Science News Letter, 80:256 October 14, 1961

NATURAL RESOURCES

Need Expanded Research As Phase of Fuels Policy

➤ NEGLECTED AREAS of research and development in the use of fuels could get a strong Federal push from results of a recently authorized Senate probe aimed at laying the foundation for a national fuels policy.

One of the expected recommendations is the reactivation of research programs on means of producing oil from coal and shale. Work began during World War II, when new sources of liquid fuels were in heavy demand, but was discontinued several years ago.

Continued research on production and piping of gas produced from coal, as a replacement for depleted natural gas fields, may also be urged.

The policy study will be conducted by the Senate Committee on Interior and Insular Affairs. It was first proposed by Sen. Jennings Randolph (D.-W. Va.).

Sen. Randolph points out that the United States has a "virtually inexhaustible" supply of coal, which will last 2,000 years at current production rates.

He stresses, however, that the Senate study is not for the purpose of producing a policy to give the coal industry "an unjust advantage" over oil and gas interests.

The senator told the Electrical Heating Conference in Washington, D. C., that lack of a fuels policy led to unemployment in coal-producing states and "financial distress" for coal-hauling railroads, when our energy base was transformed from coal to oil and natural gas. Nuclear power will bring new problems and a further transformation "in the next four decades."

He predicted that by the year 2000 nuclear power will supply about 20% of the total U. S. need for energy sources. Expanded power needs will make this 20% equivalent to about one-half of today's total energy production.

• Science News Letter, 80:256 October 14, 1961

IN SCIEN

GENERAL SCIENCE

Federal Spending Climbs For Industrial Research

➤ FEDERAL FINANCING of industrial research and development by private firms was more than four times heavier in 1960 than in 1953, the National Science Foundation, Washington, D. C., reported.

The annual total for Government sponsorship of research and development projects has climbed from $1.4 billion to $6.1 billion in the seven-year period.

The Government financed 58% of the $10.5 billion in projects reported for 1960. Its share of the 1953 total was only 39%.

Federal funds accounted for 87% of the research and development done by the aircraft industries and 68% of that done by the electrical equipment and communications industries. Industries largely self-supporting included paper, drugs, oil refining and extraction, and stone, clay and glass products.

The overall $10.5 billion figure represented a 10% increase from the $9.6 billion tallied for 1959. Federal participation has shown an annual increase of seven percent or more each year since 1953.

• Science News Letter, 80:256 October 14, 1961

MEDICINE

Lung Cancer Operation Risk Shown by X-Rays

➤ WHETHER or not a surgeon should operate on lung cancer patients can be shown by X-rays after injection of radio-opaque matter into the heart and large blood vessels (angiography).

Half of the 100 patients studied by Drs. D. E. Sanders, N. C. Delarue and George Lau, Toronto, Canada, were ruled out of surgery as bad risks because their cancers had spread too much.

Without such examinations, the radiologists told the American Roentgen Ray Society convention in Miami Beach, Fla., nearly two-thirds of the lung cancer operations must be counted as unsuccessful because the cancer could not be removed.

The radiologists said the use of angiography should supplement other kinds of diagnosis. They said their studies still could not make a positive definition of the lung root area. Nor did they show the spread of cancer from the lung to the chest wall or other areas not immediately involved with the heart and blood vessels.

What happened after injecting the radio-opaque matter, they said, was a constriction of the vessels and a thickening of the walls of the chambers or the outside coating of the heart and lungs. This showed up in multiple X-ray exposures or in cine-fluoroscopic examinations.

• Science News Letter, 80:256 October 14, 1961

NE FIELDS

PUBLIC HEALTH

Need More Information On Poisonous Mushrooms

➤ ALTHOUGH DEATHS from mushroom poisoning are rare in the United States, more must be known about the poisonous substances and their specific effects in order for a physician to treat a suspected case properly.

In New England alone, more than 800 mushroom species are found, yet only 53 varieties are considered to be poisonous. The toxic agent in 29 of these varieties, however, is still unknown, and tentative identification in 14 others is still questionable.

Writing in the New England Journal of Medicine, 265:681, 1961, Dr. Robert W. Buck, secretary of the Massachusetts Medical Society, asserts that much time has been wasted injecting guinea pigs, rabbits and mice with mushroom extracts and distillations. Such procedures "throw little light on the identity of the offending substance."

Few wild mushrooms are eaten in the United States. Known fatalities from mushroom poisoning in this country number only 24 in the last 37 years.

Eleven of these deaths were blamed on the white-spored bulb agarics, containing highly lethal "amanita toxins," and seven on the species *Gyromitra esculenta,* which causes most of the mushroom deaths among country people in eastern Germany and Poland.

Although it contains poisons, another mushroom, the fly agaric, has been used by Kamchatka Eskimos for at least 200 years as "a pleasurable intoxicant," Dr. Buck reports. Five other species, discovered in Mexico in 1957 and used by Indians, reportedly produce narcotic intoxication accompanied by "strange hallucinations."

• Science News Letter, 80:257 October 14, 1961

NATURAL RESOURCES

Advance Planning Urged For Balanced Forest Use

➤ TO BALANCE the use of United States forest lands for both commercial logging and recreation, landowners and recreation authorities should get together on long-range plans for areas still to be developed, a Maine lumber executive believes.

Curtis M. Hutchins, chairman of the board of the Dead River Company at Bangor, said at an American Forest Products Industries meeting in Washington, D. C., that bottling up timber resources to form large-scale wilderness areas and sanctuaries for recreation may be "far less in the public interest" than effective commercial management.

The problem is particularly important to Maine, he said, because the northern part of the state contains more than 10,000,000 acres of undeveloped timberland, with an exploding demand for recreational use which is "something which we feel sure is about to come."

So far, problems have been successfully solved through "natural and spontaneous cooperation" among landowners, recreationists, and state and Federal officials.

Maine has opened its lakes, streams and forests to fishing and hunting. Landowners and lumber firms have permitted free public use of their truck roads, except while cutting is going on or in times of drought when fire danger is high. Land for campsites, boat-launching areas and ski slopes has been donated to public authorities.

The problem, Mr. Hutchins believes, will become "radically different and tougher," however, when visitors start flocking in large numbers to the forests, lakes, rivers and mountains of northern and eastern Maine.

Eighty-seven percent of Maine's land area is forested, and the forest industry is the state's largest. It pays 33% of the wages and employs 29% of the wage earners in the state. Recreation, classed as the second most important industry, brings Maine about half as much income as the forest products themselves.

• Science News Letter, 80:257 October 14, 1961

MEDICINE

Drug Safely Reduces High Blood Pressure

➤ A NEW DRUG called CAPLA (mebutamate) was reported to reduce high blood pressure without serious side effects.

CAPLA stands for Central Acting Pressure Lowering Agent, and is believed to quiet the overly active control centers in the brain and spinal cord, which are involved in the development of hypertension.

Dr. Harry Shubin, medical director of the Wolffe and Broad Street Hospitals in Philadelphia, told a meeting of the metropolitan chapters of the New York State Society of Internal Medicine in New York that the drug had been effectively used to treat 100 patients suffering from various types of high blood pressure.

Good to excellent results were seen in 70% of those with essential hypertension, the most common form of high blood pressure. In 84% of the 93 patients with abnormally high diastolic pressure, CAPLA lowered the pressure to a normal range, Dr. Shubin said.

The new prescription drug was produced by Wallace Laboratories, Cranbury, N. J. Dr. Frank M. Berger, president and director of research, who discovered the drug, said it was the first to reduce high blood pressure without impairing the normal "regulatory mechanism of the body."

Although many drugs have been developed to control hypertension, their use is often complicated by depression, severe nasal congestion, gastric acidity, diarrhea or constipation.

Drowsiness and headache are the only side effects reported with any frequency by patients using CAPLA, Dr. Berger said.

• Science News Letter, 80:257 October 14, 1961

OCEANOGRAPHY

Radioactive Fallout Greater Over Ocean

➤ RADIOACTIVE fallout from nuclear testing is probably three times greater over the ocean than on land.

Woods Hole Oceanographic Institution scientists have found more strontium-90, an A-bomb by-product, in water than on land at similar latitudes. The cause of the increased fallout is unknown.

The water sampling measured the radioactive debris that normally stays in the stratosphere for many years before it is washed back to earth by rainfall. The increased fallout over the oceans seems to support recent theories that fallout remains for a much shorter time in the stratosphere than previously estimated, Dr. V. T. Bowen reports in the Institution's Oceanus magazine, 8:20, 1961.

The effect on fish food harvested from the ocean is also in doubt. "Not enough information is now available to confirm or disprove the possible effect on humans," Dr. Bowen emphasized.

The sampling was made during an equatorial cruise of a Woods Hole ship in the Atlantic Ocean. Water samples scooped out of the ocean depths also showed a higher concentration of radioactivity than on the surface.

Naturally occurring strontium-90 does not exist in measurable amounts in the ocean. It was first detected in the Atlantic after the bomb tests in early 1954.

• Science News Letter, 80:257 October 14, 1961

PUBLIC HEALTH

Laboratory Animals Surveyed for Staph

➤ SCIENTISTS and caretakers sometimes need protection from laboratory animals, according to a report on staphylococcal disease at the 12th annual meeting of the Animal Care Panel held in Boston.

Drs. Thelma J. Dean and Bennett J. Cohen of the department of animal care, University of California Medical Center, Los Angeles, said an outbreak of staph among animal care personnel had prompted a survey among dogs newly received from Los Angeles pounds.

In the search for *Staphylococcus aureus* carriers, nasal swabs from the dogs revealed 126 positive staph strains among 200 dogs. Further results will be reported, both on dogs and other laboratory animals such as rabbits, monkeys, chinchillas and rats.

The scientists pointed out that a similar epidemic of staphylococcal disease resistant to antibiotics had been studied after an outbreak at the University of Pennsylvania's Veterinary School. Newly admitted animals as well as long-term residents of the school were shown to be carriers of a staphylococcal strain that could infect humans.

In the Los Angeles outbreak, animal care personnel at the Veterans Administration Hospital as well as those in the Medical Center were affected.

• Science News Letter, 80:257 October 14, 1961

PUBLIC SAFETY

Fallout Shelters' "Lived-In" Look

Unused shelters are gloomy reminders of possible disaster, but they can be turned to immediate advantage as extra living space, David Meier reports.

➤ FALLOUT SHELTERS are finally getting the sort of thoughtful, determined attention that responsible civil defense leaders have always felt a national shelter program deserved.

The public is becoming actively aware of its responsibilities in facing up to the constant threat of nuclear war. One of our most important domestic "enemies" is giving way to a major effort in reeducation, spearheaded by top-level Governmental activity.

This "enemy" is the error-riddled, but still widely held, theory that shelters are useless because if war comes, everyone is going to be wiped out anyway.

This does not have to happen. It is, in fact, very unlikely to happen. Anyone far enough away from the blast and heat of a nuclear explosion has a good chance of surviving, if he gets away from the radioactive fallout the explosion is bound to create.

To be safe from fallout, he must take shelter. He will be safe if the shelter contains enough shielding material to keep the fallout from getting to him, and if he stays beneath this shield until the danger is over.

The primary purpose of any shelter he builds must be the protection of himself and his family against the deadly effects of radioactive fallout.

This does not mean, however, that a shelter has to be a dark, forbidding hideaway, never to be used or entered until the emergency sirens blow and the bombs start dropping.

No one is trying to spread the idea that living in a fallout shelter can be fun. On the other hand, there is nothing to prevent a shelter's protective functions from being supplemented by ordinary day-to-day usefulness.

Dual Purpose Structure

The Structural Clay Products Institute in Washington believes that the dual-purpose shelter concept—emergency protection plus daily use as an "extra" room—may stimulate home shelter construction. Home owners reluctant to invest in a limited-purpose shelter, crowded with disaster rations and equipment, may find the idea more acceptable if the family fallout shelter promises to become a lived-in area of the home.

In cooperation with the Institute, which is a national association of brick and structural tile manufacturers, the Office of Civil and Defense Mobilization assigned David Feldman, an interior decorator, to develop various plans for making a clay masonry shelter more trim and less grim.

Mr. Feldman obliged by giving standard shelters another seven "lives." His designs disclose methods of turning a shelter into a study, a den, a guest room, a children's play room, a card room, a stereo Hi-Fi room, or a utility room.

Doubling as a study, for example, a model display shelter was comfortably furnished in a 9-by-12 area with an easy chair, a couch, two armchairs, a sectional bookcase, a desk, a desk chair and a small end table, all in modern walnut and teak with harmonizing bright fabrics. Lighting came from a three-way floor lamp and a desk lamp.

Rug and Painting

The atmosphere was further brightened by a modern rug and two paintings.

The Institute built this full-sized shelter for display at Washington's National Housing Center. Elsewhere in the nation, brick manufacturers have worked with local chapters of the Mason Contractors Association of America and the Bricklayers, Masons and Plasterers' International Union to build other model shelters for exhibition at home shows, county fairs, shopping centers and other places where crowds gather.

For all such dual-purpose shelters, survival equipment should be stored just outside for quick transfer to the safety zone in the short time between the initial alarm and the first fallout danger.

Safety Core Used

For persons planning to build a new home, the Institute has worked out a brick "safety core" area strong enough to remain intact even if the rest of the house is destroyed by bomb blast, hurricane, earthquake or tornado. Brick industry engineers estimate that adding the core concept adds roughly five percent to the cost of the home.

The safety core utilizes ten-inch reinforced brick masonry walls. The roof is made of 6.5-inch reinforced clay tile beams, topped by a 2.5-inch concrete slab. In a full-sized building subjected to an atomic blast during a 1957 test in Nevada, walls, roof and beams successfully withstood the bomb's destructive force. Every brick remained intact.

Core plans also call for a steel-hinged, blast-resistant door, made of laminated plywood three and one-fourth inches thick.

The blast and storm shelter can provide additional protection against fallout if a basement refuge is built under the core area.

For daily use, the core serves as a den. The safety zone may be a single room, or it may be enlarged to include a bathroom and sleeping quarters. Besides offering protection in an immediate disaster situation, the core gives the family a place to live until the damaged part of the house is rebuilt.

If the core is augmented by using an engineering principle called arching when

DUAL-PURPOSE SHELTER—Full-sized model brick fallout shelter shows how comfortable interior furnishings can make a protective unit one of the home's lived-in areas.

the surrounding walls are built, the entire house can be made virtually disaster-proof, the Institute maintains. With six-inch brick walls used in the outer sections, the roof and the foundation are linked by three-inch steel channels on 24-inch centers. The additional cost for the entire project is estimated at less than 20% of the conventional cost.

Estimated Costs

A pamphlet that includes complete floor plans for the safety core is available free from Structural Clay Products Institute, 1520 18th Street, N.W., Washington 6, D. C. Plans for five brick and structural tile shelters are included in a 16-page booklet, "Clay Masonry Family Fallout Shelters," also free.

Costs are estimated at about $300 for a "do it yourself" basement shelter of clay tile (with the cells filled with sand) or brick, $500 to $700 for a shelter built as an extra basement room while a new home is under construction, $800 to $1,200 for an underground clay masonry shelter outside the house, $900 to $1,250 for an outdoor aboveground clay masonry shelter suitable for wet or rocky terrain, and $1,200 to $1,700 for an aboveground blast and fallout shelter of reinforced brick.

Concrete, bricks, earth and sand are among the materials designated by the Office of Civil and Defense Mobilization as "heavy enough to afford protection by absorbing radiation."

Three feet of earth, or its equivalent in other heavy material, provides the best possible protection, the Office notes. This amount of earth provides about the same shielding as, for example, two feet of concrete, seven and one-half feet of wood or four feet of books. Stacks of books, magazines, newspapers or filing cabinets can be used "in a pinch," according to an OCDM booklet, "Facts About Fallout Protection."

• Science News Letter, 80:258 October 14, 1961

DENTISTRY

Detergent Food Soapless But Can Clean Teeth

▶ THOSE DINNER-TABLE guests who cannot rush to the bathroom to brush their teeth immediately after eating can chew a piece of celery. This is a soapless "detergent," dentists say.

Dentists are now advising patients to eat celery, radishes and carrot sticks to remove other particles of food from the teeth. The tiny bacteria act quickly on sticky, high-carbohydrate foods because the food easily sticks to the teeth.

The acids produced by bacterial digestion can etch the enamel and produce a site for decay to begin.

This is causing dentists and physicians considerable worry, Dr. Philip L. White, secretary of the American Medical Association's Council on Foods and Nutrition, states in answer to a query in Today's Health.

• Science News Letter, 80:259 October 14, 1961

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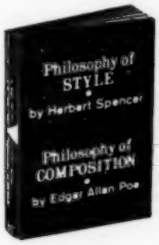

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ALDRICH ORGANIC RESEARCH CHEMICALS, Catalog 10—*Aldrich Chemical Co.*, 303 p., paper, request directly from publisher, 2369 North 29th St., Milwaukee 10, Wis. Price list of more than 5,000 research chemicals, listed alphabetically and by classes of compounds.

ALL ABOUT SOUND AND ULTRASONICS—Ira M. Freeman—*Random House*, 138 p., illus. by Irving Geis, photographs, $1.95. Introduction to the study of audible and inaudible sound, for younger readers.

THE ANALYSIS OF BEHAVIOR: A Program for Self-Instruction—James G. Holland and B. F. Skinner—*McGraw*, 175 p., diagrams, paper, $3.50. Introductory course in psychology, set up in sequences of steps as in machine programming.

AWAKENED CHINA: The Country Americans Don't Know—Felix Greene—*Doubleday*, 425 p., $5.95. Newspaper correspondent tells of what he has seen and heard on his two trips inside mainland China in 1957 and 1960.

BACTERIOLOGY FOR DENTAL STUDENTS: A Laboratory Manual—Marshall L. Snyder, Marie Slawson and Richard B. Parker—*Burgess*, 123 p., illus., paper, $3.50.

CHEMICAL THERMODYNAMICS—John G. Kirkwood and Irwin Oppenheim—*McGraw*, 261 p., $8.75. Textbook designed to serve as senior or graduate course in thermodynamics for chemists.

CHESS FOR YOUNG PEOPLE—Fred Reinfeld—*Holt*, 112 p., illus., $3.50. Clear description of the fundamentals of the game, with some chess problems and endgame compositions.

CHILDREN OF THE ASHES: The Story of a Rebirth—Robert Jungk, transl. from German by Constantine Fitzgibbon—*Harcourt*, 317 p., photographs, $4.95. The story of the survivors of Hiroshima since the bomb, based on diaries, stenographic accounts and other factual records.

CHRISTMAS TREES AND HOW THEY GROW—Glenn O. Blough—*Whittlesey House*, 48 p., illus. by Jeanne Bendick, $2.75. Tells children about the different kinds of trees used at Christmas.

COMPARATIVE PLANT ANATOMY — Sherwin Carlquist—*Holt*, 146 p., illus. $5. A guide to taxonomic and evolutionary application of anatomical data in angiosperms, for the mature student.

THE CONTINENT WE LIVE ON—Ivan T. Sanderson—*Random House*, 300 p., 235 photographs by Eliot Porter and others, maps, $20. Breathtaking photography, printed in Switzerland, illustrates zoologist's well organized presentation of wildlife in the North American natural environment. Highly readable work on ecology for the general reader.

DANGER! ICEBERGS AHEAD!—Lynn and Gray Poole—*Random House*, 79 p., photographs, maps, $1.95. About the nature of icebergs and the work of the International Ice Patrol.

DESIGN MANUAL FOR TRANSLATOR CIRCUITS—John M. Carroll, Ed.—*McGraw*, 381 p., illus., $9.50. Compiled to help the engineer in designing circuits using transistor and other semiconductor devices.

FAMOUS BRIDGES OF THE WORLD—D. B. Steinman—*Dover*, rev. ed., 99 p., illus. by Kurt Wiese, paper, $1. Short history of bridge building written for younger readers by a great bridge builder.

FOREIGN DISEASES OF FOREST TREES OF THE WORLD: An Annotated List—Perley Spaulding—*USDA (GPO)*, 361 p., paper, $1. Lists viruses by common names, bacteria and fungi by Latin names; alphabetical host index of diseases, and list of foreign diseases potentially most dangerous to North American trees.

FUNDS FOR RESEARCH AND DEVELOPMENT IN INDUSTRY, 1958: Performance and Financing—*National Science Foundation (GPO)*, 119 p., paper, 65¢. Summary of survey showing trend data on the magnitude of R&D funds in terms of fields of science and types of work.

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HAVOC: The Story of Natural Disasters—William Bixby—*Longmans*, 180 p., $3.50. Descriptions of volcanic eruptions, tidal waves, earthquakes, hurricanes, avalanches and floods, discussing forecasting problems and possible precautions.

HEALTH STATISTICS: Disability Days, United States, July 1959 to June 1960—*PHS (GPO)*, 50 p.. paper, 40¢. Findings and detailed tables on restricted activity and bed disability of civilian population.

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LECTURES ON FIELD THEORY AND THE MANY-BODY PROBLEM—E. R. Caianiello, Ed.—*Academic Press*, 327 p., $9.50. On the fundamental and applied aspects of field theory, with emphasis on its use as a tool in the study of many-body problems.

LIVING FREE: The Story of Elsa and Her Cubs—Joy Adamson, introd. by Sir Julian Huxley—*Harcourt*, 159 p., 64 p. of photographs, $5.95. A unique diary observing a tame lioness bringing up her cubs in the African bush, fully documented with a remarkable set of close-up photographs.

THE MAKING OF MAN—I. W. Cornwall—*Dutton*, 63 p., drawings and reconstructions by M. Maitland Howard, $3. Reconstructs in word and picture what has become known through fossil evidence up to 1958 about Man's ancestry.

MANUAL OF FIELD BIOLOGY AND ECOLOGY—Allen H. Benton and William E. Werner, Jr.—*Burgess*, 3rd ed., 225 p., illus., paper, $3. Introduces beginner to basic techniques and facts of taxonomy, and other biological disciplines which involve field work.

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SYNOPSES FOR MODERN SECONDARY SCHOOL MATHEMATICS—OEEC Office for Scientific and Technical Personnel—*Organisation for European Economic Cooperation*, 310 p., diagrams, paper, single copies free upon request direct to publisher, 1346 Conn. Ave., N.W., Washington, D. C. Suggestions for modern treatment of the mathematical curriculum, with the intellectually gifted students in mind.

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DECONTAMINATION FOUNTAIN for laboratories, factories or schools offers first aid for eye, nose or mouth contaminated with acids or other foreign matter. Standing upright when not in use, the chromeplated spray bar releases an instantaneous flow of water 8 by 8 inches when swung down into position. The entire face is thus bathed.

• Science News Letter, 80:262 October 14, 1961

TRACTION MATS for cars stuck in snow, mud, or on ice have easily applied snap-on spring steel clamps that attach to the tire rim securely to prevent mats from slipping or shooting out. The set consists of two steel diamond mesh panels 28" long and 8" wide plus two clamps.

• Science News Letter, 80:262 October 14, 1961

POCKET SCREWDRIVER features a handle with built-in clip that makes it easy to carry around in a coat or shirt pocket. Molded of impact-resistant butyrate plastic, the amber clip-on handle prevents poking holes in pockets or awkward bulges. The screwdriver is available in two pocket-size lengths.

• Science News Letter, 80:262 October 14, 1961

TWO-IN-ONE LIGHT BULB can be changed from a bright light into a night light by simply switching to "glow" position. Designed for use in the conventional three-way socket, the lamp, shown in the

photograph and available in two sizes, is made in the new eye-saving cylindrical shape coated inside with special glare-deflecting particles.

• Science News Letter, 80:262 October 14, 1961

THREE-DIMENSIONAL TIC-TAC-TOE is a game for all ages with rules the same as for tic-tac-toe but on a three-dimensional scale, horizontal, diagonal or vertical. Four 8-inch-square clear plastic shelves marked in checkerboard pattern snap together to form tiers 3 inches apart. Colored polyethylene chips are used as markers.

• Science News Letter, 80:262 October 14, 1961

AUTOMATIC SLIDE PROJECTOR has an automatic interval timer that can be used 12 feet away from the projector to allow the operator to join the audience. The timer can be set at various intervals from 5 to 60 seconds and modified to hold, reject or repeat any slide. The tray holds up to 45 two-by-two slides.

• Science News Letter, 80:262 October 14, 1961

AUTOMATIC RECRYSTALLIZER that purifies small quantities of organic compounds under full automatic control is particularly useful where very pure materials are required. The 25-pound instrument, a foot square, is made of stainless steel and monel metal with corrosion-resistant polyethylene tubing.

• Science News Letter, 80:262 October 14, 1961

SNAP-IN HEARING AID is a capsule containing a micro-miniature sound amplifier that can be snapped in and out of especially designed eyeglass frames. Temple bars of lightweight aluminum make the instrument virtually undetectable and also mildew proof. The easily removable capsule can be transferred to different frames.

• Science News Letter, 80:262 October 14, 1961

Nature Ramblings

➤ IN THE MORE southerly salmon streams, the fish that made their run last spring are now returning to sea, depleted of their eggs and milt. But far to the north, in Labrador and the upper reaches of Alaska, there are salmon just entering the rivers.

The salmon run, still not completely understood, lasts all summer long. It starts early in the south, and the fish stay upstream for a considerable time. In the north it starts later and is over sooner. Both north and south, the salmon lay their eggs at nearly the same time—late September and early October.

The eggs remain unhatched all winter, and only the return of warmth in spring brings out the tiny fish, which then make their way to the oceans where they will feed and grow for several years.

The salmon have been using this timetable of migration and spawning for centuries, and recent experiments indicate that it is essential to their well-being, if not their survival.

Salmon

Within the last few years, the Washington State Department of Fisheries succeeded in raising chinook and silver salmon to maturity in captivity.

When confined to salt water ponds, the salmon matured in two to five years, just as rapidly as those who make the perilous journey to and from the sea.

But the captives did not grow very large and the females laid only about one-tenth as many eggs as the free salmon.

• Science News Letter, 80:262 October 14, 1961

Do You Know?

Boron, used in high energy rocket fuels, is now applied to cancer research.

TV *violence* inspires aggressive behavior in children, it is believed.

The strength of pure *silver* is increased five times by blending into it a small percentage of tiny sapphire "whiskers."

Congestive heart failure is usually the result of a *heart* whose pumping efficiency is dwindling faced by a heavy and usually increasing circulatory load.

Sheep fed alfalfa pellets containing 5% of dicalcium phosphate are protected against poisonous oxalates in weed.

Certain chemical *fire inhibitors* are significantly more effective when applied to the air around the flame rather than to the burning fuel or to the flame.

• Science News Letter, 80:262 October 14, 1961

GEOGRAPHY

Antarctic Peak Surveyed, Reveals New Figure

See Front Cover

▶ MOUNT EREBUS in the Antarctic has been found to be 12,280 feet high during a recently completed survey. The height of this smouldering volcano was first computed during an expedition 1910-1913 to be 13,200 feet. A later survey showed it to be 15,325 feet, and to add to the confusion, cartographers have recently used the figure of 14,997 feet.

Discrepancies in hte earlier figures were caused by poor surveying conditions. Only during the latest survey was it possible by electronic means to measure a base line long enough to provide the precise measurements, the U.S. Geological Survey, Washington, D. C., reported.

The smoking peak is seen on the cover of this week's SCIENCE NEWS LETTER.

• Science News Letter, 80:263 October 14, 1961

MEDICINE

Reducing Blood Potassium Prevents Serious Seizures

▶ A WAY of preventing a kind of seizure known to physicians as Stokes-Adams seizures is reported by Dr. Louis Tobian, director of the University of Minnesota's Cardiac Clinic, Minneapolis, Minn.

The seizure is accompanied by unconsciousness, gasping breathing and heart block.

Bringing down the level of potassium in the blood plasma by dosage with chlorothiazide results in relief from the Stokes-Adams attacks, Dr. Tobian reports in the New England Journal of Medicine, 265:623, 1961.

The lessened incidence of seizures was not accompanied by any significant change in blood plasma acidity although the bicarbonate in the plasma rose slightly in some cases. The seizures were prevented even when the heart block continued in some patients, Dr. Tobian states.

• Science News Letter, 80:263 October 14, 1961

Questions

EDUCATION—Can a computer learn from its "experience" with different individuals? p. 255.

MEDICINE—How many "episodes" of poisoning among young children occur each year? p. 253.

SPACE—Which mother tongue is spoken by the largest percentage of people on earth? p. 251.

Photographs: Cover, U. S. Navy for U. S. Geological Survey; p. 251, Thiokol Chemical Corporation; p. 253, Indiana University; p. 255, National Carbon Company; p. 258, Structural Clay Products Institute; p. 262, Westinghouse Electric Corporation.

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